

## **Final 2006 Decision Document of Iowa's Clean Water Act, Section 303(d) List Water Quality Limited Segments Still Requiring TMDLs**

### **I. Executive Summary**

On October 29, 2007, the Iowa Department of Natural Resources (IDNR) submitted its 2006 update to its Clean Water Act (CWA) Section 303(d) list to the United States Environmental Protection Agency (EPA) for review. Subsequent to further review, IDNR resubmitted an updated CWA Section 303(d) list on March 19, 2008, herein referred to as the submittal. Following its review of Iowa's complete submittal, EPA is approving the state's removal of 51 waterbodies and 86 impairments and the addition of 105 waterbodies and 165 impairments to the state's CWA Section 303(d) list. This document summarizes EPA's review and the basis for its decision.

Section 303(d)(1) of the CWA directs states to identify those waters within their jurisdictions for which effluent limitations required by Section 301(b)(1)(A) and (B) are not stringent enough to implement any applicable water quality standard (referred to as 'water quality-limited segments' defined in 40 C.F.R. 130.7), and to establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters. The CWA Section 303(d) listing requirement applies to water quality-limited segments impaired by pollutant loadings from both point and/or nonpoint sources. After a state submits its CWA Section 303(d) list to EPA, the Agency is required to approve or disapprove that list.

Iowa's 2006 submittal is an update to the state's most recently approved CWA Section 303(d) list, approved by EPA on May 23, 2006 (i.e., the state's 2004 CWA Section 303(d) list). In its submittal, IDNR included its assessment methodology to identify waters that do not meet the state's approved water quality standards and, therefore, are required to be included on CWA Section 303(d) lists. This 2006 assessment methodology includes revisions to the methodology utilized to develop the 2004 CWA Section 303(d) list for Iowa. Water quality data that meet the assessment criteria included within the state's 2006 revised methodology were evaluated by IDNR. Those waters determined to be water quality-limited were submitted to EPA as an update to the CWA Section 303(d) list. The methodology establishes specific protocols and thresholds for assessing waterbodies, in addition to data sufficiency and data quality requirements. The methodology contains procedures for assessing both aquatic life use support and human health use support.

In 2000, the Iowa legislature enacted its "Credible Data Law" which sets out, in statute, minimum requirements for the use of water quality data for purposes of state water quality standards development and review, water quality assessment, changes to the state's CWA Section 303(d) list, determining designated use support or classification, identification of water quality degradation and establishment of TMDLs. IDNR has stated that nearly all recent water quality data have already been used for Section 305(b) assessments and thus have already been considered for Section 303(d) listings. Also, a listed waterbody will not be removed from the state's Section 303(d) list simply because the data upon which the impairment was based have aged beyond five years.

All waters which were included in Iowa's approved 2004 CWA Section 303(d) list will remain on the state's CWA Section 303(d) list, unless IDNR removes a waterbody from a future list and EPA approves the removal. IDNR's submittal for EPA review includes an updated list reflecting, among other things:

- additional waterbodies which IDNR determined to be water quality-limited segments pursuant to the state's listing methodology and, therefore, included in the update of the CWA Section 303(d) list which IDNR submitted to EPA for review; and
- waterbodies included on Iowa's previously approved 2004 CWA Section 303(d) list which were determined not to need TMDLs pursuant to the listing methodology and, therefore, removed from the update of the CWA Section 303(d) list submitted to EPA for review.

While the guidelines, protocols, and requirements in state statute and the IDNR methodology might be useful tools for IDNR to use in identifying impaired waters, they are not part of the state's water quality standards. Hence, EPA did not rely solely on the statute or the methodology in reviewing Iowa's list. Instead, EPA reviewed all available information including any information excluded under the state's methodology, to determine if the state's list was developed consistent with the underlying state water quality standards. EPA's review process generally followed a two-step analysis:

- 1) the Region reviewed the state's listing methodology, including data collection and data assessment requirements, to determine whether, based on Iowa's approved water quality standards, the methodology was a reasonable method for identifying water quality-limited segments; and
- 2) where EPA was unsure whether the methodology was a reasonable method for identifying water quality-limited segments, the Region requested additional information from IDNR to conduct further waterbody and data analysis.

Following EPA's decision to Iowa's 2006 submission, the current CWA Section 303(d) list in the state of Iowa contains:

- an approved 2004 CWA Section 303(d) list;
- approved additions to the 2004 CWA Section 303(d) list; and
- approved removals from the 2004 CWA Section 303(d) list.

The statutory and regulatory requirements relevant to CWA Section 303(d) lists, and EPA's review of Iowa's compliance with each requirement, are described in detail below.

## **II. Statutory and Regulatory Background**

### **A. Identification of Water Quality-limited Segments for Inclusion on the CWA Section 303(d) List**

Section 303(d)(1) of the CWA directs states to identify those waters within its jurisdiction for which effluent limitations required by Section 301(b)(1)(A) and (B) are not stringent enough to implement any applicable water quality standard, and to establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters. The Section 303(d) listing requirement applies to waters impaired by point and/or nonpoint sources, pursuant to EPA's long-standing interpretation of Section 303(d).

EPA regulations at 40 CFR 130.7(b)(1) provide that states do not need to list waters where the following controls are adequate to implement applicable standards:

- technology-based effluent limitations required by the CWA;
- more stringent effluent limitations required by state or local authority; and
- other pollution control requirements required by state, local, or federal authority.

### **B. Consideration of Existing and Readily Available Water Quality-Related Data and Information**

In developing Section 303(d) lists, states are required to assemble and evaluate all existing and readily available water quality related data and information, including, at a minimum, consideration of existing and readily available data and information about the following categories of waters:

- waters identified as partially meeting or not meeting designated uses, or as threatened, in the state's most recent Section 305(b) report;
- waters for which dilution calculations or predictive modeling indicate non-attainment of applicable standards;
- waters for which water quality problems have been reported by governmental agencies, members of the public, or academic institutions; and
- waters identified as impaired or threatened in any Section 319 nonpoint assessment submitted to EPA (see 40 CFR 130.7(b)(5)).

States are also required to consider any other data and information that is existing and readily available. EPA's 1991 Guidance for Water Quality-Based Decisions describes categories of water quality related data and information that may be existing and readily available (see Guidance for Water Quality-Based Decisions, The TMDL Process, EPA Office of Water, 1991, Appendix C ("EPA's 1991 Guidance")). While states are required to evaluate all existing and readily available water quality-related data and information, states may decide to rely or not rely on particular data or information in determining whether to list particular waters.

In addition to requiring states to assemble and evaluate all existing and readily available water quality-related data and information, EPA regulations at 40 CFR 130.7(b)(6) require states

to include as part of their submissions to EPA, documentation to support decisions to rely or not to rely on particular data and information and decisions to list or not to list waters. Such documentation needs to include, at a minimum, the following information:

- a description of the methodology used to develop the list;
- a description of the data and information used to identify waters;
- a rationale for any decision to not use any existing and readily available data and information; and
- any other reasonable information requested by the Region.

### **C. Priority Ranking**

EPA regulations also codify and interpret the requirement in the CWA, Section 303(d)(1)(A) of the Act, that states establish a priority ranking for listed waters. The regulations at 40 CFR 130.7(b)(4) require states to prioritize waters on their Section 303(d) lists for TMDL development, and also to identify those water quality-limited segments (WQLSs) targeted for TMDL development in the next two years. In prioritizing and targeting waters, states must, at a minimum, take into account the severity of the pollution and the uses to be made of such waters (see CWA Section 303(d)(1)(A)). As long as these factors are taken into account, the Act provides that states establish priorities. States may consider other factors relevant to prioritizing waters for TMDL development, including immediate programmatic needs, vulnerability of particular waters as aquatic habitats, recreational, economic, and aesthetic importance of particular waters, degree of public interest and support, and state or national policies and priorities (see 57 FR 33040, 33045 [July 24, 1992], and EPA's 1991 Guidance).

## **III. Iowa's Approach to Identifying Waters for the 2006 Section 303(d) List**

### **A. Iowa's 2006 Integrated Report Format**

EPA guidance for states in meeting the requirements of CWA Section 303(d) recommends a format which integrates the requirements of both CWA Sections 305(b) and 303(d) in creating a five category "integrated report" format. The 2006 Iowa submission under CWA Section 303(d) is the second submission by the state of Iowa using this "integrated report" format. Category 5 of the 2006 list constitutes Iowa's list of impaired waters for purposes of CWA Section 303(d), and is subject to EPA review and approval. EPA is taking action only on Category 5 which includes water quality-limited segments still requiring TMDLs. The following describes the five categories constituting Iowa's Integrated Report and the number of waterbodies assigned to each category by IDNR. Under Iowa's five category system, most waterbodies are assigned to only one category.

Category 1 consists of 192 waterbody segments attaining all designated uses and no use is threatened.

Category 2 consists of 257 waterbody segments for which some, but not all, designated uses are attained and none are threatened. Attainment status of the remaining designated

uses is unknown because data are insufficient to categorize a waterbody consistent with the state's listing methodology.

Category 3 consists of 1,216 waterbody segments for which there are insufficient or no data and information to determine, consistent with the state's listing methodology, if any designated use is attained.

Category 4 consists of 95 waterbody segments for which one or more designated uses are impaired or threatened but establishment of a TMDL is not required.

Category 5 consists of 279 waterbody segments for which a pollutant has caused, is suspected of causing, or is projected to cause an impairment or threat of impairment of one or more designated uses and the establishment of a TMDL is required. This category also includes those segments for which impairment is indicated, but the cause or source is unknown.

The state's Integrated Report format includes sub-categories within Categories 2, 3, 4 and 5. Only waterbody segments within Category 5 are subject to EPA approval. Within Categories 2 and 3, IDNR has added Categories 2b and 3b which include those waterbody segments for which there is "evaluated data" which suggest impairment. According to IDNR's methodology, "waters "evaluated" as impaired are identified as having insufficient data to determine whether beneficial uses are met." In short, those data determined by IDNR to be "evaluated data" are not deemed by IDNR to be of adequate quality or quantity to support a determination that a use designated within state water quality standards is or is not being met. The 169 waterbody segments listed within Categories 2b and 3b served to support EPA's evaluation of IDNR's data assessment process and its determination whether all water quality-limited segments were listed by IDNR in Category 5.

The state's Integrated Report format also incorporated an expansion of Category 4 into four sub-categories. Sub-category 4a includes waters that are threatened or impaired, but for which a TMDL has been completed and approved. Sub-category 4b includes waters that are threatened or impaired, but for which "other required control measures are expected to result in the attainment of water quality standards." Sub-category 4c includes waters where the "threat or impairment is not caused by a pollutant." Sub-category 4d includes waters impaired by a fish kill but enforcement actions have been taken against responsible party. Sub-categories 4a through 4c are recognized within EPA guidance for the development of an integrated report. However, sub-category 4d constitutes a variation on EPA guidance. EPA's review of the state categories and sub-categories was conducted within the context of whether or not a waterbody segment should be listed within Category 5 based on existing and readily available data and information.

The state's Integrated Report format also included two sub-categories within Category 5 which distinguish between whether the cause of impairment is known (Category 5a) or the cause of impairment is unknown (Category 5b).

## **B. Iowa's 2006 Methodology**

IDNR's "Methodology for Iowa's 2006 water quality assessment, listing, and reporting pursuant to Sections 305(b) and 303(d) of the federal Clean Water Act," September 2007, guides IDNR's evaluation of "existing and readily available water quality-related data and information" (40 CFR 130.7(b)(5)) and identification of "water quality-limited segments still requiring TMDLs" (40 CFR 130.7(a)). IDNR's methodology also expanded the concept of "impaired waters" for purposes of ensuring that Iowa's impaired waters are eligible for funds to improve water quality but are not included in Category 5 (see IDNR Methodology, page 14). As described earlier, Category 5 of the 2006 list constitutes Iowa's list of impaired waters for purposes of CWA Section 303(d) and is subject to EPA review and approval. EPA is taking action only on Category 5 which includes water quality-limited segments still requiring TMDLs.

According to the state's "Listing Methodology," data sources used to assess water quality conditions in Iowa for purposes of Section 305(b) reporting and to aid in developing the state's 303(d) list include:

- (1) Physical, chemical, and biological data from ambient fixed station water quality monitoring networks conducted by IDNR and other agencies (e.g., U.S. Geological Survey, U.S. Army Corps of Engineers);
- (2) Data from water quality monitoring conducted by adjacent states on border rivers and waters flowing into the state;
- (3) Data from biological monitoring being conducted by IDNR in cooperation with the University of Iowa Hygienic Laboratory (UHL) as part of a current effort to establish biological criteria for Iowa's ecoregions and subcoregions and as part of the on-going Regional Environmental Monitoring and Assessment Program (EMAP) project;
- (4) Data from the IDNR-sponsored statewide lake monitoring project conducted by Iowa State University;
- (5) Data from monitoring of bacterial indicators in rivers and at beaches of publicly-owned lakes;
- (6) Data from programs to monitor fish tissue for toxic contaminants;
- (7) Reports of pollutant-caused fish kills;
- (8) Data, when available, from public water supplies on the quality of raw and finished water;
- (9) Drinking water source water assessments under Section 1453 of the Safe Drinking Water Act;
- (10) Data from special studies of water quality and aquatic communities;

- (11) Best professional judgment of IDNR staff;
- (12) Results of volunteer monitoring (e.g., by IOWATER trained volunteers); and
- (13) Water related information received from the public.

Additionally, sources of all existing and readily available water quality related data and information to be considered specifically for developing the state's 303(d) list include, but are not limited to, the following:

- (1) Iowa's most recent 305(b) report;
- (2) CWA Section 319 nonpoint source assessments;
- (3) Dilution calculations, trend analyses, or predictive models for determining the physical, chemical, or biological integrity of streams, rivers, lakes, and estuaries; and
- (4) Water quality related data and water related information from local, state, territorial, or federal agencies (especially the U.S. Geological Survey's National Water Quality Assessment Program and National Stream Quality Accounting Network), tribal governments, members of the public, and academic institutions.

### **C. Coordination with Other States on the Mississippi and Missouri Rivers**

EPA's Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act contains recommendations on how states should handle shared waters with regard to the sharing of water quality data, assessment decisions for those shared waters, and accounting for the listing decision inconsistencies between states. The guidance further recommends that EPA Regional offices and Interstate Commissions, where applicable, should assist in resolving inconsistencies among states with shared waters, where they arise.

IDNR's 2006 assessment methodology specifically addresses IDNR's coordination efforts with other state agencies regarding data assembly and evaluation for "border rivers and waters flowing into the state." Due to a 2004 interstate agreement (memorandum of understanding) developed by the Upper Mississippi River Basin Association's Water Quality Task Force, IDNR implemented the uniform assessment reaches for the Iowa reach of the Upper Mississippi River that are consistent with assessment reaches used by the adjacent states of Wisconsin and Illinois. Data from water quality monitoring conducted by adjacent states on border rivers and waters flowing into the state include data from: South Dakota, Minnesota, Wisconsin, Illinois, Missouri, and Nebraska. Data from fixed-station ambient water quality monitoring programs were used for purposes of water quality assessments in Iowa. These continuing efforts will improve states' efforts to satisfy the requirements of CWA Sections 305(b) and 303(d) for data assembly and evaluation for border rivers and waters flowing into the state.

#### **IV. EPA Analysis of Iowa's Approach to Listing Waters for the 2006 List**

EPA is approving Iowa's 2006 CWA Section 303(d) list, based on the requirements of Section 303(d) of the CWA and 40 CFR 130.7. EPA's action is based on its analysis of whether IDNR reasonably identified all water quality-limited segments requiring listing. In determining whether IDNR reasonably identified all water quality-limited segments still needing a TMDL, EPA first looked at IDNR's use support determinations as documented in the state's ADB+ database.

IDNR's 2006 assessment methodology identifies a "cutoff date" as the end of the calendar year 2004, for data collection in support of IDNR's water quality data assessment. EPA guidance recognizes the appropriateness of a reasonable data collection cutoff date allowing states to initiate actual data assessment and list preparation. Data not considered for the 2006 assessment should be considered for the 2008 submission. Despite the application of a "cutoff date" by IDNR for the development of the 2006 list, IDNR considered data submitted as part of the state's public notice and comment period from May 3, 2007 through June 29, 2007. EPA believes IDNR complied with the requirements of federal regulations at 40 CFR 130.7(b)(5) regarding the assembly and evaluation of all existing and readily available water quality-related data and information.

The 2006 assessment methodology also discusses IDNR's treatment of water quality-related data collected more than five years prior to the current assessment period. Federal regulations and guidance recognize that, in some instances, older data might not reflect current water quality conditions. Where the state demonstrates "good cause" for not including older data in the derivation of its list, federal regulations at 40 CFR 130.7(b)(6)(iv) provide for the state not including a water or waters on its list. However, a demonstration of "good cause" relies on the state showing that there are changes in condition in the watershed or waterbody which result in older data not being representative of current water quality status. According to IDNR's 2006 methodology, recent water quality data have already been used for Section 305(b) assessments and thus have already been considered for Section 303(d) listings. There are no waterbodies left off the list because the data were more than five years old. Also, a listed waterbody will not be removed from the state's Section 303(d) list simply because the data upon which the impairment was based have aged beyond five years.

To confirm that Iowa's CWA Section 303(d) list was developed in a manner compliant with the requirements at 40 C.F.R. Part 130.7 (regarding the assembly and evaluation of "all existing and readily available water quality-related data and information"), EPA reviewed the information contained in IDNR's ADB+ database for all waters listed in Iowa's Integrated Report Categories 5a, 5b, and all waters de-listed.

#### **V. EPA Analysis of IDNR Changes to the State's CWA Section 303(d) List**

EPA compared waters listed in Category 5 of the state's 2004 Integrated Report with waters listed in Category 5 of the state's 2006 Integrated Report to determine whether waters were removed from the list, pollutants identified as causing impairment were changed, or waterbody descriptions had changed. In each case, such changes could constitute a change to the



state's CWA Section 303(d) list requiring EPA approval. As described earlier in this document, Iowa's 2006 CWA Section 303(d) list is a part of the state's Integrated Report. The Integrated Report format is consistent with EPA guidance and includes five categories of waters. Category 5 of the state's Integrated Report constitutes the state's 2006 CWA Section 303(d) list.

In its review of the state's 2006 list, EPA has reviewed Iowa's description of the data and information the state relied upon in developing its list, its methodology for identifying waterbodies and IDNR's responses to public comment. In accordance with 40 CFR 130.7(d)(2), EPA is approving Iowa's 2006 CWA Section 303(d) list (Category 5 of their 2006 Integrated Report), consisting of a total of 279 waterbodies. In its June 29, 2007, comments, provided to IDNR during the public comment period for the proposed 2006 list, EPA identified waterbodies previously listed as impaired under Category 5 of Iowa's CWA Section 2004 list.

These waters were proposed by IDNR for exclusion from Category 5 of Iowa's 2006 CWA Section 303(d) list or for changes in their listing status which could be considered as a change to the CWA Section 303(d) list (e.g., segment description changed, listed causal pollutant changed).

In response to comments, IDNR retained six waterbodies:

Bear Creek, 01-UIA-0170\_2;  
Walnut Creek, 01-WPS-0109\_0;  
Palmer Creek, 02-SHL-00235\_1;  
Lyons Creek, 04-UDM-0125\_0;  
West Otter Creek, 04-UDM-0235\_1; and  
West Nishnabotna River, 05-NSH-0090\_4.

Two waterbodies were added in IDNR's October 23, 2007, submission - Green Valley Lake, 05-PLA-00295-L\_0, and Dry Creek, 06-BSR-0035\_0.

IDNR's re-submittal on March 19, 2008, corrected the de-listing for Otter Creek, 06-BSR-0072\_0, and included two impairments for Ventura Marsh, 02-WIN-00465-L\_0. Four additional waterbodies and impairments were removed from Category 5 and placed in Category 4a as result of approved TMDLs:

North Fork Maquoketa River, 01-NMQ-0020\_2;  
Middle Fork South Beaver Creek, 02-CED-0432\_1;  
Big Sioux River, 06-BSR-0010\_4; and  
Big Sioux River, 06-BSR-0020\_2.

The following impairments were removed from Category 5 as a result of approved TMDLs, yet the waterbodies remain in Category 5 for other impairments not covered in the TMDLs:

Cedar River 02-CED-0030\_2, nitrate;  
Maquoketa River, 01-NMQ-0060\_1, bacteria;

McCloud Run, 02-CED-0218\_0, thermal modifications;  
Big Sioux River, 06-BSR-0010\_3, bacteria; and  
Carter Lake, 06-WEM-00265-L\_0, algae and turbidity.

As a result of IDNR's changes to the list of waterbodies which were modified or removed from Iowa's CWA Section 303(d) list, EPA initiated its review of **51 waterbodies** to determine whether IDNR had "good cause" for modifying or not including these waters on its 2006 CWA Section 303(d) list.

#### **A. Waters Removed by IDNR from Iowa's CWA Section 303(d) List and Approved by EPA**

EPA is approving the modification to or removal of 51 waterbodies from the state's CWA Section 303(d) list consistent with the requirements of federal regulations at 40 CFR 130.7(b)(6)(iv). Section 40 CFR 130.7(b)(6)(iv) provides for the exclusion of waters from the state's CWA Section 303(d) list. These regulations require that the state "demonstrate good cause for not including water or waters on the list. The reasons for each delisting were included in the ADB submittal, and additional details were provided to EPA in the form of a responsiveness summary prior to the final section 303(d) list submittal. The following are the general reasons cited for removal of waterbodies from the section 303(d) list:

- Recent data collected from a 303(d) listed segment indicated that a listed pollutant is no longer a potential cause of water quality impairment.
- Changes in water quality standards and/or assessment methods resulted in changes in the use support status of listing segments.
- The state review identified flaws in original listings, attributable to errors associated with segment identifiers, or the use of inapplicable criteria.

The rationale supporting the removal of these 51 waters from the state's list can be grouped into four general categories and are also identified in Table 1.

##### **1. Waters with Approved TMDLs (28)**

Twenty-eight waterbodies were removed from the state's list because TMDLs have been developed for those waters and approved by EPA. In each instance, a TMDL has been developed for the listed pollutant or condition or IDNR and EPA have agreed that the TMDL will address the listed pollutant or condition. For some waters, they continue to be listed in Iowa's Category 5 for another pollutant or condition or they are listed in another Category within Iowa's Integrated Report based on other water quality data. These waters are included in Table 1 with information regarding each TMDL described in the last column.

##### **2. New Water Quality Data Supports Change in Listing (8)**

Eight stream segments are being removed from the state list based on new water quality data which indicates that the use is supported with regard to the previously specified pollutants:

Iowa River, 02-IOW-0030\_2;  
Long Creek, 02-IOW-0090\_2;  
Coldwater Creek, 02-SHL-0023\_0;  
East Fork Des Moines River, 04-EDM-0020\_2;  
Honey Creek, 05-CHA-0068\_0;  
Wolf Creek, 05-CHA-0070\_0;  
West Nodaway River, 05-NOD-0100\_2; and  
Big Sioux River, 06-BSR-0020\_1.

New water quality data for the following waterbodies show that pollutant-specific criteria for listed pollutants are not being exceeded. However, the waterbodies remain on the list due to existing impairments from other pollutants or pollutants have changed, causing additional impairments (See Table 1):

Coralville Reservoir, 02-IOW-0040-L\_0;  
Raccoon River, 04-RAC-0010\_1;  
Raccoon River, 04-RAC-0010\_2;  
South Fork Chariton River, 05-CHA-0060\_1;  
South Fork Chariton River, 05-CHA-0060\_2;  
Jordan Creek, 05-CHA-0062\_0;  
Ninemile Creek, 05-CHA-0066\_0; and  
Floyd River, 06-FLO-0010\_0.

3. Re-calculated biological assessment criteria indicate no impairment (7).

Seven stream segments are being removed from the state list as a result of additional data gathering which was conducted by IDNR on reference sites from 2002 to 2004:

Nutting Creek, 01-TRK-0416\_0;  
Yellow River, 01-YEL-0080\_3;  
Bear Creek, 02-IOW-0180\_1;  
Fourmile Creek, 04\_LDM-0320\_1;  
Walnut Creek, 05-NSH-0100\_1;  
Walnut Creek, 05-NSH-0100\_2; and  
East Branch West Nishnabotna River, 05-NSH-0140\_1.

This additional data was used to provide a robust data set to re-calibrate the biological impairment criteria in order to assess in stream biological conditions. As the state's water quality standards do not presently contain numeric criteria for biological conditions, IDNR's determination is based on the collection of sampling results from a decade of sampling (1994-2004) to develop biotic indexes for both fish and benthic macroinvertebrate using reference sites representing least disturbed stream habitats that support healthy biological aquatic communities. IDNR's assessment methodology for developing the 2006 CWA Section 303(d) list describes the method or rationale for determining the support status of designated aquatic life uses.

#### 4. Flaw in the Original Analysis Supports Change in Listing (8)

According to the IDNR's methodology, the bioassessment methods were developed for Class B streams, which have assigned aquatic life uses, typically possess perennial flows and drain larger watersheds. Further, IDNR's indices for assessing the biological integrity of streams are derived from perennial streams possessing the highest possible quality or reference conditions. To determine use attainment status, the biological condition of these reference streams serve as the benchmark against which other streams of similar size and hydrology are compared. IDNR believes that smaller streams with differing hydrology and watershed characteristics and without a designated aquatic life use (i.e., General Use streams), possess inherently different biological character. IDNR believes it is inappropriate to apply both bioassessment protocols and benchmarks/indices developed for Class B streams to General Use streams for purposes of determining whether water quality impairment exists (IDNR Methodology, page 34).

In its review of the state's proposed list, EPA also questioned IDNR regarding its decision not to list larger streams and rivers, which were designated for Class B uses, where bioassessment data indicated impairment. IDNR responded that those streams were of such greater flow, watershed size and biological character that some of IDNR's bioassessment methods and one of the indices were similarly not scientifically suited to a determination of water quality impairment for those waters. According to IDNR, non-wadeable streams and rivers, draining watersheds greater than 500 square miles, are not suited to field methods applied to assess the benthic macroinvertebrate communities of wadeable streams and the data gathered by their application likely does not accurately represent the biological condition of these waters. IDNR also stated that the conditions found among wadeable Class B streams representing the best attainable quality might not be representative of those conditions among larger, non-wadeable streams and rivers with respect to benthic macroinvertebrates. Therefore, IDNR does not believe that the indices developed from those "reference conditions" and used to determine use support status, with regard to biological information on benthic macroinvertebrates, should be used to evaluate these larger waters.

As EPA cannot find fault in IDNR's reasoning regarding its application of bioassessment information to various classes of streams, there is no basis for EPA to disagree with IDNR's contention that either General Use streams or large non-wadeable streams and rivers should not be listed as water quality impaired based on the comparison of bioassessment data to those indices developed for wadeable Class B streams. IDNR has committed to the development of appropriate methods, metrics, and indices for these different classes of streams in the near future and EPA intends to support IDNR's work in this area. In its review of waters removed by IDNR from the Iowa CWA Section 303(d) list, IDNR removed two streams from the state's impaired waters list using this rationale (Drainage Ditch 71, 03-SSK-0100\_0; and East Nishnabotna River, 05-NSH-0200\_5). These waters are included in Table 1.

Six stream segments were listed in error based on data collected from another stream segment. IDNR has removed the six stream segments listed below for which no water quality data is available and EPA approves that action.

Lytle Creek, 01-NMQ-0050\_2;  
Iowa River, 02-IOW-0070\_2;  
Long Creek, 02-IOW-0090\_1;  
Walnut Creek, 04-RAC-0020\_1;  
Prairie Creek, 04-UDM-0375\_0; and  
West Fork Little Sioux River, 06-LSR-0310\_0.

Modifications were made to the original listings of Ventura Marsh, 02-WIN-00465-L\_0, and Avenue of the Saints Lake, 02-IOW-00105-L\_0, to include only those pollutants that have been positively identified as the cause of the aquatic life use impairment. Based on available data, Ventura Marsh gained two new aquatic life use impairments due to algae and turbidity. In addition, the exotic species listing for Avenue of the Saints Lake, 02-IOW-00105-L\_0, was removed, as the algae and turbidity impairments remain as the causes of the aquatic life use impairment. EPA agrees with the decision that used algae and turbidity as the correct indicators causing the aquatic life impairment.

EPA concludes that the state properly assembled and considered all existing and readily available data and information, including all of the existing and readily available data and information relating to the categories of waters specified in 40 CFR 130-7(b)(5). Therefore, EPA concludes that the state's decision to list the waters identified in its listing submittal are consistent with federal listing requirements.

## **VI. Priority Ranking in Iowa's CWA Section 303(d) List**

IDNR's listing methodology describes how the state will prioritize waterbodies for purposes of establishing TMDLs. Iowa's submission of its 2006 CWA Section 303(d) list included a priority ranking of each waterbody as required in Section 303(d)(1)(A) of the CWA and 40 CFR 130.7(b)(4) of EPA's implementing regulations.

## **VII. Iowa's Public Participation Process**

IDNR public noticed its 2006 draft CWA Section 303(d) list beginning with the May 1, 2007, meeting of Iowa's Environmental Protection Commission. The list and IDNR's ADB+ water quality database were also made available for public review and comment through the IDNR website beginning May 3, 2007. IDNR extended the public comment period from June 15 to June 29, 2007, at the request of several parties. IDNR received a total of seven pieces of public comment, including those from EPA. IDNR finalized its 2006 CWA Section 303(d) list and submitted it for approval on October 23, 2007, and it was received by EPA on October 29, 2007. Subsequent to further review, IDNR resubmitted an updated CWA Section 303(d) list on March 12, 2008, and it was received by EPA on March 19, 2008.

EPA has reviewed Iowa's public participation process and has concluded that the state provided adequate public notice and opportunity for the public to comment on its decision regarding the CWA Section 303(d) list in compliance with federal requirements.

Table 1 lists each modification or waterbody approved for the addition to, or removal from, the state's CWA Section 303(d) list and the supporting rationale for each.

| <b>Table 1</b><br><b>IDNR Changes to Iowa's CWA Section 303(d) List Approved by EPA</b> |                       |                     |             |  |                         |
|---|-----------------------|---------------------|-------------|--|-------------------------|
|   | <b>Waterbody Name</b> | <b>Waterbody ID</b> | <b>2006</b> | <b>Rationale</b>   | <b>TMDL</b>             |
| 1   | Maquoketa River       | 01-MAQ-0060_1       | 4a          | Listed for primary contact impairment; geometric mean > WQ criterion.            | TMDL approved (11.9.06) |
| 2   | Maquoketa River       | 01-MAQ-0060_3       | 5b          | Aquatic life impairment, Low Biotic Index.                                       |                         |
| 3   | Silver Lake           | 01-MAQ-00680_L      | 5a          | Aquatic life impairment, aesthetically objectionable conditions: Chl-a TSI > 70. |                         |
| 4   | Silver Lake           | 01-MAQ-00680_L      | 5a          | Aquatic life impairment, > 10% of samples violate WQ criterion for pH.           |                         |
| 5   | Silver Lake           | 01-MAQ-00680_L      | 5a          | Primary contact impairment, > 10% of samples violate WQ criterion for pH.        |                         |
| 6   | Mississippi River     | 01-NEM-0010_1       | 5a          | Primary contact impairment, listing by adjacent state.                           |                         |
| 7   | Mississippi River     | 01-NEM-0010_2       | 5a          | Aquatic life impairment, violations of chronic WQ criterion for aluminum.        |                         |
| 8   | Mississippi River     | 01-NEM-0010_2       | 5a          | Primary contact impairment, listing by adjacent state.                           |                         |
| 9   | Mississippi River     | 01-NEM-0010_3       | 5a          | Primary contact impairment, listing by adjacent state.                           |                         |
| 10  | Mississippi River     | 01-NEM-0010_4       | 5a          | Aquatic life impairment, violations of chronic WQ criterion for aluminum.        |                         |
| 11  | Mississippi River     | 01-NEM-0010_4       | 5a          | Primary contact impairment, listing by adjacent state.                           |                         |

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|----|---|----------------|----|---|-------------------------|
| 12 | Mississippi River                                 | 01-NEM-0030_1  | 5a | Aquatic life impairment, violations of chronic WQ criterion for aluminum  |                         |
| 13 | Duck Creek  | 01-NEM-0060_1  | 5a | Primary contact impairment, geometric mean > WQ criterion   |                         |
| 14 | North Fork Maquoketa River                        | 01-NMQ-0020_2  | 4a | Listed for low biotic index caused by sediment, nutrients, and ammonia  | TMDL approved (4.11.07) |
| 15 | Lytle Creek                                       | 01-NMQ-0050_2  | 3a | This segment was inappropriately listed, sampling data were collected on 01-NMQ-0050_1 which is in category 3b. |                         |
| 16 | Johns Creek                                       | 01-NMQ-0111_0  | 5b | Aquatic life impairment, fish kill in 2005  |                         |
| 17 | Bear Creek  | 01-NMQ-0141_0  | 5b | Aquatic life impairment, fish kills in 2004 and 2005  |                         |
| 18 | Pleasant Creek                                    | 01-TRK-0010_1  | 5b | Aquatic life impairment, Low Biotic Index   |                         |
| 19 | Tetes Des Morts Creek                             | 01-TRK-0090_1  | 5b | Aquatic life impairment, fish kill in 2005  |                         |
| 20 | Middle Fork Maquoketa river (aka, Bankston Creek) | 01-TRK-0180_2  | 5b | Aquatic life impairment, Low Biotic Index   |                         |
| 21 | Point Hollow Creek (aka, White Pine Creek)        | 01-TRK-0240_0  | 5b | Aquatic life impairment, Low Biotic Index   |                         |
| 22 | Unnamed Tributary to Point Hollow Creek           | 01-TRK-02415_0 | 5b | Aquatic life impairment, fish kill in 2005  |                         |
| 23 | Roberts Creek                                     | 01-TRK-0360_3  | 5b | Aquatic life impairment, Low Biotic Index; fish kill in 2005  |                         |

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|----|---------------------------------|----------------|----|---|-------------------------|
| 24 | Nutting Creek                   | 01-TRK-0416_0  | 1  | Re-calculation of IBI and 2006 biological data indicates fully supporting aquatic life uses                             |                         |
| 25 | Unnamed Tributary to Bass Creek | 01-TRK-04515_0 | 5b | Aquatic life impairment, fish kill in 2004  |                         |
| 26 | Upper Iowa River                | 01-UIA-0090_0  | 5a | Fish consumption impairment, > IDNR/IDPH level of 1 meal/week advisory: consumption advisory issued in 2006 for mercury |                         |
| 27 | Upper Iowa River                | 01-UIA-0100_0  | 5a | Fish consumption impairment, > IDNR/IDPH level of 1 meal/week advisory: consumption advisory issued in 2006 for mercury |                         |
| 28 | Upper Iowa River                | 01-UIA-0110_2  | 5a | Primary contact impairment, geometric mean > WQ criterion.  |                         |
| 29 | Upper Iowa River                | 01-UIA-0110_2  | 5a | Fish consumption impairment, > IDNR/IDPH level of 1 meal/week advisory: consumption advisory issued in 2006 for mercury |                         |
| 30 | East Pine Creek                 | 01-UIA-0380_0  | 5b | Aquatic life impairment, Low Biotic Index   |                         |
| 31 | Volga River                     | 01-VOL-0010_1  | 4a | Listed for Primary contact impairment; geometric mean > WQ criterion  | TMDL approved (11.9.06) |
| 32 | Volga River                     | 01-VOL-0010_2  | 4a | Listed for Primary contact impairment; geometric mean > WQ criterion  | TMDL approved (11.9.06) |

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|----|---------------------------------------|----------------|----|--|--|
| 33 | Frog Hollow Lake<br>(aka, Volga Lake) | 01-VOL-00130_L | 5a | Primary contact<br>impairment, worsening<br>trend in levels of Chl-a             |  |
| 34 | Brush Creek                           | 01-VOL-0120_2  | 5b | Aquatic life impairment,<br>Low Biotic Index                                     |  |
| 35 | Wapsipinicon River                    | 01-WPS-0010_5  | 5a | Primary contact<br>impairment, geometric<br>mean > WQ criterion                  |  |
| 36 | Wapsipinicon River                    | 01-WPS-0020_3  | 5a | Primary contact<br>impairment, > 10% of<br>samples > single-sample<br>criterion. |  |
| 37 | Brophy Creek                          | 01-WPS-0050_0  | 5b | Aquatic life impairment,<br>Low Biotic Index                                     |  |
| 38 | Unnamed Tributary<br>to Buffalo Creek | 01-WPS-0270_0  | 5b | Aquatic life impairment,<br>fish kill in 2005                                    |  |
| 39 | Miners Creek                          | 01-YEL-0010_2  | 5b | Aquatic life impairment,<br>Low Biotic Index                                     |  |
| 40 | North Cedar Creek                     | 01-YEL-0040_0  | 5b | Aquatic life impairment,<br>Low Biotic Index                                     |  |
| 41 | Yellow River                          | 01-YEL-0080_3  | 1  | Re-calculation of IBI<br>indicates fully supporting<br>aquatic life uses         |  |
| 42 | Suttle Creek                          | 01-YEL-0100_0  | 5a | Aquatic life impairment, ><br>10% of samples violate<br>WQ criterion for DO      |  |
| 43 | Unnamed Creek<br>(aka, Bear Creek)    | 01-YEL-0110_0  | 5a | Aquatic life impairment, ><br>10% of samples violate<br>WQ criterion of DO       |  |
| 44 | Norfolk Creek                         | 01-YEL-0130_0  | 5a | Aquatic life impairment, ><br>10% of samples violate<br>WQ criterion for DO      |  |
| 45 | Cedar River                           | 02-CED-0030_2  | 5a | Primary contact<br>impairment, > 10% of<br>samples > single-sample<br>criterion  |  |

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|----|-------------|----------------|----|--|-------------------------|
| 46 | Cedar River | 02-CED-0030_2  | 4a | Listed for drinking water impairment, worsening trend caused by nitrate  | TMDL approved (1.24.07) |
| 47 | Cedar River | 02-CED-0110_2  | 5a | Primary contact impairment, geometric mean > WQ criterion  |                         |
| 48 | Cedar River | 02-CED-0110_2  | 5a | Fish consumption impairment, > IDNR/IDPH level of 1 meal/week advisory: consumption advisory issued in 2006 for mercury  |                         |
| 49 | Cedar River | 02-CED-0110_3  | 5a | Primary contact impairment, geometric mean > WQ criterion  |                         |
| 50 | Cedar River | 02-CED-0110_3  | 5a | Fish consumption impairment, > IDNR/IDPH level of 1 meal/week advisory: consumption advisory issued in 2006 for mercury  |                         |
| 51 | Pike Run    | 02-CED-0157_1  | 5b | Aquatic life impairment, Low Biotic Index  |                         |
| 52 | McCloud Run | 02-CED-0218_0  | 4a | Listed for aquatic life impairment, thermal modifications  | TMDL approved (8.10.07) |
| 53 | McCloud Run | 02-CED-0218_0  | 5a | Aquatic life impairment, unknown toxicity (fish kill)  |                         |
| 54 | Cedar Lake  | 02-CED-02250_L | 5a | Fish consumption impairment, > IDNR/IDPH level of 1 meal/week advisory: consumption advisory continues to exist for PCBs |                         |

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|----|--------------------------------------|----------------|----|---|-------------------------|
| 55 | East Branch Blue Creek               | 02-CED-0234_0  | 5b | Aquatic life impairment, fish kills in 2003, 2004 and 2005                  |                         |
| 56 | Black Hawk Creek                     | 02-CED-0370_1  | 4a | Listed for Primary contact impairment, geometric mean > WQ criterion        | TMDL approved (11.9.06) |
| 57 | Casey Lake (aka, Hickory Hills Lake) | 02-CED-03060_L | 5a | Aquatic life impairment, > 10% of samples violate WQ criterion for pH       |                         |
| 58 | Casey Lake (aka, Hickory Hills Lake) | 02-CED-03060_L | 5a | Primary contact impairment, > 10% of samples violate WQ criterion for pH    |                         |
| 59 | Black Hawk Creek                     | 02-CED-0390_0  | 5b | Aquatic life impairment, Low Biotic Index                                   |                         |
| 60 | Middle Fork South Beaver Creek       | 02-CED-0432_1  | 4a | Listed for aquatic life impairment, low biotic index                        | TMDL approved (8.24.07) |
| 61 | Burr Oak Creek                       | 02-CED-0490_1  | 5b | Aquatic life impairment, Low Biotic Index                                   |                         |
| 62 | Cottonwood Drain                     | 02-CED-0031_1  | 5b | Aquatic life impairment, Low Biotic Index                                   |                         |
| 63 | Mississippi River                    | 02-ICM-0010_1  | 5a | Primary contact impairment, listed by Illinois EPA                          |                         |
| 64 | Mississippi River                    | 02-ICM-0010_2  | 5a | Aquatic life impairment, violation of chronic WQ criterion for aluminum     |                         |
| 65 | Mississippi River                    | 02-ICM-0010_2  | 5a | Primary contact impairment, listed by Illinois EPA                          |                         |
| 66 | Mississippi River                    | 02-ICM-0010_2  | 5a | Drinking water impairment, violations of human health criterion (0.18 µg/l) |                         |

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|    |                      |                  |    |   |  |
|----|----------------------|------------------|----|---|--|
| 67 | Iowa River           | 02-IOW-0030_2    | 1  | Primary contact recreational use is considered fully supported based on 2002-2004 ambient monitoring results. Geometric mean < WQ criterion.  |  |
| 68 | Iowa River           | 02-IOW-0030_2    | 1  | Aquatic life use is considered fully supported based on 2004 survey of freshwater mussels showing significant recovery of mussel community.   |  |
| 69 | Lake MacBride        | 02-IOW-00390-L_0 | 5a | Primary contact impairment, geometric mean > WQ criterion   |  |
| 70 | Coralville Reservoir | 02-IOW-0040-L_0  | 5a | Primary contact impairment, aesthetically objectionable conditions due to turbidity. Based on 2002-2004 ambient monitoring results the geometric mean of indicator bacteria (E. coli) meets the WQ criterion. |  |
| 71 | Iowa River           | 02-IOW-0070_2    | 3b | Incorrect segment was identified on the 2004 list. Correct waterbody (02-IOW-0070_3) has been added to the 2006 list. This waterbody lacks sufficient water quality information to determine use attainment.  |  |

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|    |                |                |    |  |  |
|----|----------------|----------------|----|--|--|
| 72 | Iowa River     | 02-IOW-0070_3  | 5a | Primary contact impairment, > 10% of samples > single-sample criterion   |  |
| 73 | Iowa River     | 02-IOW-0080_2  | 5a | Primary contact impairment, > 10% of samples > single-sample criterion   |  |
| 74 | Long Creek     | 02-IOW-0090_1  | 3a | Incorrect segment was identified on the 2004 list. Biological data was collected on adjacent upstream segment (02-IOW-0090_2). Waterbody lacks sufficient water quality information to determine use attainment. |  |
| 75 | Long Creek     | 02-IOW-0090_2  | 1  | More recent (2001) biological data show “full support” of aquatic life use.  |  |
| 76 | Honey Creek    | 02-IOW-0093_0  | 5b | Aquatic life impairment, Low Biotic Index  |  |
| 77 | Iowa Lake      | 02-IOW-01150_L | 5a | Aquatic life impairment, > 10% of samples violate WQ criterion for pH  |  |
| 78 | Iowa Lake      | 02-IOW-01150_L | 5a | Primary contact impairment, > 10% of samples violate WQ criterion for pH   |  |
| 79 | Old Mans Creek | 02-IOW-0150_1  | 5a | Aquatic life impairment, Low Biotic Index  |  |
| 80 | Old Mans Creek | 02-IOW-0150_2  | 5a | Aquatic life impairment, Low Biotic Index  |  |

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|----|----------------------------------|------------------|----|---|--|
| 81 | Unnamed tributary to Clear Creek | 02-IOW-01615_0   | 5a | General aquatic life use impairment, aesthetically objectionable conditions due to low DO and organic enrichment.                           |  |
| 82 | Muddy Creek                      | 02-IOW-0162_0    | 5a | General aquatic life use impairment, violations of narrative criteria due to sewage sludge and ammonia.                                     |  |
| 83 | Bear Creek                       | 02-IOW-0180_1    | 1  | Re-calculation of IBI indicates fully supporting aquatic life uses  |  |
| 84 | Bear Creek                       | 02-IOW-0180_2    | 5b | Aquatic life impairment, Low Biotic Index   |  |
| 85 | Walnut Creek                     | 02-IOW-0187_1    | 5b | Aquatic life impairment, Low Biotic Index   |  |
| 86 | Union Grove Lake                 | 02-IOW-02195-L_0 | 5a | Primary contact impairment, geometric mean > WQ criterion   |  |
| 87 | Union Grove Lake                 | 02-IOW-02195-L_0 | 5a | Aquatic life impairment, > 10% of samples violate WQ criterion for pH   |  |
| 88 | Lower Pine Lake                  | 02-IOW-0330-L_0  | 5a | Primary contact impairment, geometric mean > WQ criterion   |  |
| 89 | Avenue of the Saints Lake        | 02-SHL-00105-L_0 | 5a | The aquatic life impairment due to exotic species was removed as a pollutant. This waterbody still remains impaired by algae and turbidity. |  |
| 90 | Shell Rock River                 | 02-SHL-0020_1    | 5a | Primary contact impairment, > 10% of samples exceed single-sample maximum criterion.  |  |

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| 91  | Coldwater Creek | 02-SHL-0023_0    | 1  | More recent (2002) biological data show “full support” of aquatic life use.  |                         |
| 92  | Silver Creek    | 02-SHL-00295-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to algae.                                  | TMDL approved (4.3.06)  |
| 93  | Silver Creek    | 02-SHL-00295-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to turbidity.                              | TMDL approved (4.3.06)  |
| 94  | Bailey Creek    | 02-WFC-0110_0    | 5b | Aquatic life impairment, Low Biotic Index  |                         |
| 95  | Beeds Lake      | 02-WFC-0090-L_0  | 4a | Listed for Primary contact impairment, geometric mean > WQ criterion   | TMDL approved (4.3.06)  |
| 96  | Clear Lake      | 02-WIN-00450-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to algae                                   | TMDL approved (3.10.05) |
| 97  | Clear Lake      | 02-WIN-00450-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to turbidity                               | TMDL approved (3.10.05) |
| 98  | Ventura Marsh   | 02-WIN-00465-L_0 | 5a | The aquatic life impairment due to exotic species was removed. This waterbody still remains impaired by algae and turbidity. |                         |
| 99  | Ventura Marsh   | 02-WIN-00465-L_0 | 5a | Aquatic life impairment, aesthetically objectionable conditions due to algae   |                         |
| 100 | Ventura Marsh   | 02-WIN-00465-L_0 | 5a | Aquatic life impairment, aesthetically objectionable conditions due to turbidity   |                         |

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| 101 | Calmus Creek                     | 02-WIN-0050_0    | 5b | Aquatic life impairment, Low Biotic Index                                |  |
| 102 | Rock Creek Lake                  | 03-NSK-00340-L_0 | 5a | Primary contact impairment, geometric mean > WQ criterion                |  |
| 103 | Coal Creek                       | 03-NSK-0039_0    | 5a | General aquatic life use impairment, fish kill in 2003 caused by ammonia |  |
| 104 | Mississippi River                | 03-SKM-0010_1    | 5a | Aquatic life impairment, violation of chronic WQ criterion for aluminum  |  |
| 105 | Mississippi River                | 03-SKM-0010_1    | 5a | Primary contact impairment, listed by Illinois EPA                       |  |
| 106 | Mississippi River                | 03-SKM-0010_2    | 5a | Primary contact impairment, listed by Illinois EPA                       |  |
| 107 | Lake Geode                       | 03-SKU-00650-L_0 | 5a | Primary contact impairment, geometric mean > WQ criterion                |  |
| 108 | Lake Geode                       | 03-SKU-00650-L_0 | 5a | Aquatic life impairment, > 10% of samples violate WQ criterion for pH    |  |
| 109 | Lake Geode                       | 03-SKU-00650-L_0 | 5a | Primary contact impairment, > 10% of samples violate WQ criterion for pH |  |
| 110 | White Oak Conservation Area Lake | 03-SSK-00118-L_0 | 5a | Aquatic life impairment, > 10% of samples violate WQ criterion for pH    |  |
| 111 | White Oak Conservation Area Lake | 03-SSK-00118-L_0 | 5a | Primary contact impairment, > 10% of samples violate WQ criterion for pH |  |

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|-----|-----------------------|------------------|----|--|-------------------------|
| 112 | Lake Keomah           | 03-SSK-00120-L_0 | 5a | Primary contact impairment, aesthetically objectionable conditions due to algae                |                         |
| 113 | Lake Keomah           | 03-SSK-00120-L_0 | 5a | Aquatic life impairment, > 10% of samples violate WQ criterion for pH                          |                         |
| 114 | Lake Keomah           | 03-SSK-00120-L_0 | 5a | Primary contact impairment, > 10% of samples violate WQ criterion for pH                       |                         |
| 115 | Lake Keomah           | 03-SSK-00120-L_0 | 5a | Primary contact impairment, aesthetically objectionable conditions due to turbidity            |                         |
| 116 | South Skunk River     | 03-SSK-0030_3    | 5b | Aquatic life impairment, Low Biotic Index  |                         |
| 117 | Lake Patoka Bondurant | 03-SSK-0057_0    | 5b | General aquatic life use impairment, fish kill in 2005   |                         |
| 118 | Long Dick Creek       | 03-SSK-0091_0    | 5b | General aquatic life use impairment, fish kill in 2004 caused by ammonia                       |                         |
| 119 | Long Dick Creek       | 03-SSK-0091_0    | 5b | General aquatic life use impairment, fish kill in 2004 caused by organic enrichment/low DO     |                         |
| 120 | Little Wall Lake      | 03-SSK-00360-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to algae     | TMDL approved (3.21.06) |
| 121 | Little Wall Lake      | 03-SSK-00360-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to turbidity | TMDL approved (3.21.06) |

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| 122 | Drainage Ditch 71                      | 03-SSK-0100_0    | 3b | This segment was inappropriately listed, bioassessment tool to list a general use stream was done in error.   |                         |
| 123 | East Fork Des Moines River             | 04-EDM-0020_2    | 2a | More recent (2003) biological data show “full support” of aquatic life use. Insufficient information to determine if the remaining designated uses are met. |                         |
| 124 | Tuttle Lake (a.k.a. Okamanpeedan Lake) | 04-EDM-00290-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to algae.   | TMDL approved (1.13.05) |
| 125 | Tuttle Lake (a.k.a. Okamanpeedan Lake) | 04-EDM-00290-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to turbidity.   | TMDL approved (1.13.05) |
| 126 | Des Moines River                       | 04-LDM-0020_1    | 5a | Primary contact impairment, geometric mean > WQ criterion   |                         |
| 127 | Des Moines River                       | 04-LDM-0020_1    | 5a | Aquatic life impairment, fish kills in 2002 and 2006  |                         |
| 128 | Des Moines River                       | 04-LDM-0020_2    | 5a | Primary contact impairment, geometric mean > WQ criterion   |                         |
| 129 | Soap Creek                             | 04-LDM-0090_2    | 5b | Aquatic life impairment, Low Biotic Index   |                         |
| 130 | Sugar Creek                            | 04-LDM-0119_0    | 5b | Aquatic life impairment, fish kill in 2004  |                         |
| 131 | Miller Creek                           | 04-LDM-0130_0    | 5b | Aquatic life impairment, fish kills in 2000 and 2003  |                         |
| 132 | Indian Lake                            | 04-LDM-00150-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to algae.   | TMDL approved (3.10.05) |

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|     |                  |                  |    |   |                          |
|-----|------------------|------------------|----|---|--------------------------|
| 133 | Indian Lake      | 04-LDM-00150-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to turbidity. | TMDL approved (3.10.05)  |
| 134 | Ottumwa Lagoon   | 04-LDM-00215-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to algae.     | TMDL approved (12.28.05) |
| 135 | Ottumwa Lagoon   | 04-LDM-00215-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to turbidity. | TMDL approved (12.28.05) |
| 136 | Ottumwa Lagoon   | 04-LDM-00215-L_0 | 4a | Listed for fish consumption impairment, > FDA action level or chlordane.                        | TMDL approved (12.28.05) |
| 137 | Easter Lake      | 04-LDM-00490-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to turbidity. | TMDL approved (5.3.05)   |
| 138 | Williamson Pond  | 04-LDM-01995-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to turbidity. | TMDL approved (3.21.06)  |
| 139 | Hooper Area Pond | 04-LDM-02718-L_0 | 5a | Aquatic life impairment, > 10% of samples violate WQ criterion for pH.                          |                          |
| 140 | Camp Creek       | 04-LDM-0228_0    | 4a | Listed for aquatic life impairment, low biotic index.   | TMDL approved (8.17.05)  |
| 141 | Cedar Lake       | 04-LDM-03085-L_0 | 4a | Listed for drinking Water impairment, public water supply notices of violation (nitrate).       | TMDL approved (6.6.05)   |
| 142 | Cedar Lake       | 04-LDM-03085-L_0 | 5a | Drinking Water impairment, average level of atrazine > MCL                                      |                          |

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| 143 | Fourmile Creek      | 04-LDM-0320_1  | 2a | Re-calculation of IBI indicates fully supporting aquatic life uses. Insufficient information to determine if the remaining designated uses are met. |                        |
| 144 | Yeader Creek        | 04-LDM-0340_0  | 4a | Listed for general aquatic life use impairment, monitoring data shows declining conditions to aquatic community.                                    | TMDL approved (5.3.05) |
| 145 | Raccoon River       | 04-RAC-0010_1  | 5a | Listed for aquatic life impairment, more recent (2002-2004) data from IDNR & ISU networks show no violations of copper.                             |                        |
| 146 | Raccoon River       | 04-RAC-0010_2  | 5a | Listed for aquatic life impairment, more recent (2002-2004) data from IDNR & ISU networks show no violations of copper.                             |                        |
| 147 | Walnut Creek        | 04-RAC-0020_1  | 2a | Flaw in original analysis. Insufficient information to determine if the remaining designated uses are met.  |                        |
| 148 | North Raccoon River | 04-RAC-0040_6  | 5b | Aquatic life impairment, Low Biotic Index   |                        |
| 149 | North Raccoon River | 04-RAC-0050_2  | 5b | Aquatic life impairment, Low Biotic Index   |                        |
| 150 | Poor Farm Creek     | 04-RAC-01695_0 | 5b | General aquatic life use impairment, fish kill in 2004  |                        |
| 151 | Mosquito Creek      | 04-RAC-02401_0 | 5b | General aquatic life use impairment, fish kill in 2003 caused by ammonia  |                        |

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|-----|-----------------------|------------------|----|---|-------------------------|
| 152 | Brushy Creek          | 04-RAC-0251_0    | 5b | General aquatic life use impairment, fish kill in 2005 caused by animal waste.                  |                         |
| 153 | Storm Lake            | 04-RAC-00530-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to turbidity. | TMDL approved (5.3.05)  |
| 154 | Spring Lake           | 04-RAC-00805-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to turbidity. | TMDL approved (3.13.06) |
| 155 | Des Moines River      | 04-UDM-0010_2    | 5a | Primary contact impairment, geometric mean > WQ criterion                                       |                         |
| 156 | Saylorville Reservoir | 04-UDM-0020-L_0  | 5a | Primary contact impairment, geometric mean > WQ criterion                                       |                         |
| 157 | Big Creek Lake        | 04-UDM-0140-L_0  | 5a | Primary contact impairment, geometric mean > WQ criterion                                       |                         |
| 158 | Silver Lake           | 04-UDM-01020-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to algae.     | TMDL approved (1.13.05) |
| 159 | Silver Lake           | 04-UDM-01020-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to turbidity. | TMDL approved (1.13.05) |
| 160 | Briggs Woods Lake     | 04-UDM-01880-L_0 | 5a | Aquatic life impairment, fish kill in 2004 caused by low DO and excessive macrophytes.          |                         |
| 161 | Lake Cornelia         | 04-UDM-02290-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to algae.     | TMDL approved (9.29.06) |

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|-----|------------------|------------------|----|--|-------------------------|
| 162 | Lake Cornelia    | 04-UDM-02290-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to turbidity.  | TMDL approved (9.29.06) |
| 163 | Lizard Creek     | 04-UDM-0300_1    | 5b | Aquatic life impairment, Low Biotic Index  |                         |
| 164 | Prairie Creek    | 04-UDM-0375_0    | 3a | Incorrect segment was identified on the 303(d) list. Biological data was collected on adjacent (general use) upstream segment (04-UDM-0376_0). Waterbody lacks sufficient water quality information to determine if any designated uses are met. |                         |
| 165 | Five Island Lake | 04-UDM-03850-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to algae.  | TMDL approved (9.29.06) |
| 166 | Five Island Lake | 04-UDM-03850-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to turbidity.  | TMDL approved (9.29.06) |
| 167 | Ingham Lake      | 04-UDM-03985-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to turbidity.  | TMDL approved (1.13.05) |
| 168 | Ingham Lake      | 04-UDM-03985-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to algae.  | TMDL approved (1.13.05) |

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|     |  |               |    |  |  |
|-----|--|---------------|----|--|--|
| 169 | Rathbun Reservoir  | 05-CHA-00-L_2 | 5a | Primary contact impairment, aesthetically objectionable conditions due to turbidity.                   |  |
| 170 | Rathbun Reservoir  | 05-CHA-00-L_2 | 5a | Aquatic life impairment, aesthetically objectionable conditions on the sport fishery due to turbidity. |  |
| 171 | Rathbun Reservoir  | 05-CHA-00-L_3 | 5a | Primary contact impairment, aesthetically objectionable conditions due to turbidity.                   |  |
| 172 | Rathbun Reservoir  | 05-CHA-00-L_3 | 5a | Aquatic life impairment, aesthetically objectionable conditions on the sport fishery due to turbidity. |  |
| 173 | Chariton River<br>(Unnamed Tributary to Rathbun Reservoir) | 05-CHA-0057_0 | 5b | Aquatic life impairment, fish kill in 2005 caused by diesel fuel.                                      |  |
| 174 | South Fork Chariton River                                  | 05-CHA-0060_1 | 5b | Aquatic life impairment, Low Biotic Index  |  |
| 175 | South Fork Chariton River                                  | 05-CHA-0060_1 | 5a | More recent (2002-04) data do not indicate aquatic life use impairment caused by low DO.               |  |
| 176 | South Fork Chariton River                                  | 05-CHA-0060_2 | 5b | Aquatic life impairment, Low Biotic Index  |  |
| 177 | South Fork Chariton River                                  | 05-CHA-0060_2 | 5a | More recent (2002-04) data do not indicate aquatic life use impairment caused by low DO.               |  |
| 178 | Jordan Creek   | 05-CHA-0062_0 | 5b | Aquatic life impairment, Low Biotic Index  |  |

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|-----|----------------|---------------|----|---|--|
| 179 | Jordan Creek   | 05-CHA-0062_0 | 5b | More recent (2002-04) data do not indicate aquatic life use impairment caused by low DO.  |  |
| 180 | Jordan Creek   | 05-CHA-0062_0 | 5b | More recent (2002-04) data do not indicate aquatic life use impairment caused by ammonia. |  |
| 181 | Jackson Creek  | 05-CHA-0063_0 | 5b | Aquatic life impairment, Low Biotic Index   |  |
| 182 | Ninemile Creek | 05-CHA-0066_0 | 5b | Aquatic life impairment, Low Biotic Index   |  |
| 183 | Ninemile Creek | 05-CHA-0066_0 | 5b | More recent (2002-04) data do not indicate aquatic life use impairment caused by low DO.  |  |
| 184 | Honey Creek    | 05-CHA-0068_0 | 1  | More recent (2002-04) data do not indicate aquatic life use impairment caused by low DO.  |  |
| 185 | Wolf Creek     | 05-CHA-0070_0 | 1  | More recent (2002-04) data do not indicate aquatic life use impairment caused by low pH.  |  |
| 186 | Wolf Creek     | 05-CHA-0070_0 | 1  | More recent (2002-04) data do not indicate aquatic life use impairment caused by low DO.  |  |
| 187 | Fivemile Creek | 05-CHA-0077_0 | 5a | Aquatic life impairment, worsening trend in levels of DO.                                 |  |
| 188 | Weldon River   | 05-GRA-0070_0 | 5b | Aquatic life impairment, Low Biotic Index.  |  |

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|-----|-----------------------------|------------------|----|--|-------------------------|
| 189 | Little River Watershed Lake | 05-GRA-00810-L_0 | 5a | Fish consumption impairment, > IDNR/IDPH level of 1 meal/week advisory: consumption advisory issued in 2006 for mercury. |                         |
| 190 | Nine Eagles Lake            | 05-GRA-01010-L_0 | 5a | Primary contact impairment, geometric mean > WQ criterion  |                         |
| 191 | Nine Eagles Lake            | 05-GRA-01010-L_0 | 5a | Fish consumption impairment, > IDNR/IDPH level of 1 meal/week advisory: consumption advisory issued in 2006 for mercury. |                         |
| 192 | Lotts Creek                 | 05-GRA-0170_0    | 5b | Aquatic life impairment, Low Biotic Index  |                         |
| 193 | Middle Fork Grand River     | 05-GRA-0180_0    | 5b | Aquatic life impairment, Low Biotic Index  |                         |
| 194 | East Nodaway River          | 05-NOD-0030_2    | 5b | Aquatic life impairment, Low Biotic Index  |                         |
| 195 | West Nodaway River          | 05-NOD-0100_2    | 1  | More recent (2004) biological (biocriteria) data show full support of aquatic life use.                                  |                         |
| 196 | Viking Lake                 | 05-NOD-00930-L_0 | 5a | Primary contact impairment, geometric mean > WQ criterion.   |                         |
| 197 | East Nishnabotna River      | 05-NSH-0020_5    | 3b | This segment was inappropriately listed, bioassessment tool to list a non-wadeable stream was done in error.             |                         |
| 198 | Pierce Creek Pond           | 05-NSH-00220-L_0 | 4a | Listed for Primary contact impairment, impacts on WQ due to common carp.   | TMDL approved (3.15.05) |

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|-----|------------------------|------------------|----|---|-------------------------|
| 199 | Pierce Creek Pond      | 05-NSH-00220-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to turbidity. | TMDL approved (3.15.05) |
| 200 | Davids Creek           | 05-NSH-0063_0    | 5b | Aquatic life impairment, fish kill in 2004 cause by animal waste.                               |                         |
| 201 | West Nishnabotna River | 05-NSH-0090_3    | 5b | Aquatic life impairment, Low Biotic Index   |                         |
| 202 | Sands Timber Lake      | 05-PLA-0015-L_0  | 5a | Aquatic life impairment, aesthetically objectionable conditions due to turbidity.               |                         |
| 203 | Lake of Three Fires    | 05-PLA-00335-L_0 | 5a | Primary contact impairment, geometric mean > WQ criterion.                                      |                         |
| 204 | Wilson Park Lake       | 05-PLA-00380-L_0 | 5a | Primary contact impairment, aesthetically objectionable conditions due to algae.                |                         |
| 205 | Wilson Park Lake       | 05-PLA-00380-L_0 | 5a | Aquatic life impairment, > 10% of samples violate WQ criterion for pH.                          |                         |
| 206 | Wilson Park Lake       | 05-PLA-00380-L_0 | 5a | Primary contact impairment, > 10% of samples violate WQ criterion for pH.                       |                         |
| 207 | Windmill Lake          | 05-PLA-00430-L_0 | 5a | Aquatic life impairment, > 10% of samples violate WQ criterion for pH.                          |                         |
| 208 | Windmill Lake          | 05-PLA-00430-L_0 | 5a | Primary contact impairment, > 10% of samples violate WQ criterion for pH.                       |                         |

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|-----|------------------------------------|------------------|----|--|-------------------------|
| 209 | Littlefield Lake                   | 05-NSH-00675-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to turbidity.  | TMDL approved (9.22.06) |
| 210 | Littlefield Lake                   | 05-NSH-00675-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to algae.  | TMDL approved (9.22.06) |
| 211 | Walnut Creek                       | 05-NSH-0100_1    | 2a | Re-calculation of IBI indicates fully supporting aquatic life uses. Insufficient information to determine if the remaining designated uses are met.    |                         |
| 212 | Walnut Creek                       | 05-NSH-0100_2    | 1  | Re-calculation of IBI indicates fully supporting aquatic life uses.  |                         |
| 213 | East Branch West Nishnabotna River | 05-NSH-0140_1    | 1  | Re-calculation of IBI indicates fully supporting aquatic life uses.  |                         |
| 214 | Big Sioux River                    | 06-BSR-0010_3    | 4a | Listed for Primary contact impairment, geometric mean > WQ criterion.  | TMDL approved (1.23.08) |
| 215 | Big Sioux River                    | 06-BSR-0010_4    | 4a | Listed for Primary contact impairment, geometric mean > WQ criterion.  | TMDL approved (1.23.08) |
| 216 | Big Sioux River                    | 06-BSR-0020_1    | 2a | More recent data (2002-04) show "full support" of primary contact use. Insufficient information to determine if the remaining designated uses are met. |                         |
| 217 | Big Sioux River                    | 06-BSR-0020_2    | 4a | Listed for Primary contact impairment, > 10% of samples exceeded single-sample maximum criterion.  | TMDL approved (1.23.08) |

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| 218 | Perry Creek                            | 06-BSR-0021_0 | 5b | Aquatic life impairment, Low Biotic Index.   |  |
| 219 | Sixmile Creek                          | 06-BSR-0029_0 | 5b | Aquatic life impairment, Low Biotic Index.   |  |
| 220 | Dry Creek                              | 06-BSR-0035_0 | 5b | General aquatic life use impairment, overwhelming evidence of impacts: no fish were found in IDNR/UHL biological assessments in 2004 and 2005. |  |
| 221 | Unnamed tributary to Little Rock River | 06-BSR-0065_0 | 5b | General aquatic life use impairment, fish kill in 2005 caused by ammonia.  |  |
| 222 | Otter Creek                            | 06-BSR-0070_3 | 5b | Aquatic life impairment, fish kills in 2002 and 2004 caused by low DO.   |  |
| 223 | Mud Creek                              | 06-BSR-0080_0 | 5b | Aquatic life impairment, fish kill in 2003, Low Biotic Index.  |  |
| 224 | Floyd River                            | 06-FLO-0010_0 | 5a | More recent (2002-04) data do not indicate aquatic life use impairment due to ammonia.   |  |
| 225 | Floyd River                            | 06-FLO-0010_0 | 5a | Aquatic life impairment, violations of chronic WQ criterion for copper   |  |
| 226 | Floyd River                            | 06-FLO-0010_0 | 5a | Aquatic life impairment, violations of chronic WQ criterion for lead   |  |
| 227 | Floyd River                            | 06-FLO-0020_1 | 5b | Aquatic life impairment, Low Biotic Index  |  |
| 228 | Willow Creek                           | 06-FLO-0065_0 | 5b | Aquatic life impairment, fish kill in 2003   |  |

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| 229 | Little Floyd River           | 06-FLO-0080_0    | 4a | Listed for aquatic life impairment, low biotic index  | TMDL approved (6.6.05)  |
| 230 | Little Sioux River           | 06-LSR-0040_3    | 5b | Aquatic life impairment, Low Biotic Index   |                         |
| 231 | West Fork Little Sioux River | 06-LSR-0131_0    | 5b | Aquatic life impairment, fish kill in 2004  |                         |
| 232 | Johns Creek                  | 06-LSR-0143_0    | 5b | Aquatic life impairment, Low Biotic Index   |                         |
| 233 | Trumbull Lake                | 06-LSR-02450-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to algae.     | TMDL approved (7.24.06) |
| 234 | Trumbull Lake                | 06-LSR-02450-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to turbidity. | TMDL approved (7.24.06) |
| 235 | West Okoboji Lake            | 06-LSR-02840-L_2 | 5a | Primary contact impairment, geometric mean > WQ criterion                                       |                         |
| 236 | Little Spirit Lake           | 06-LSR-02870-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to algae.     | TMDL approved (1.13.05) |
| 237 | Little Spirit Lake           | 06-LSR-02870-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to turbidity. | TMDL approved (1.13.05) |
| 238 | Milford Creek                | 06-LSR-0300_0    | 5a | Aquatic life impairment, violations of chronic WQ criterion for ammonia.                        |                         |

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| 239 | West Fork Little Sioux River | 06-LSR-0310_0    | 3a | Incorrect segment was identified on the 2004 list. Biological data was collected on a segment of the Little Sioux River (06-LSR-0040_3). Waterbody lacks sufficient water quality information to determine use attainment. |                         |
| 240 | Carter Lake                  | 06-WEM-00265-L_0 | 4a | Listed for Primary contact impairment, aesthetically objectionable conditions due to algae.  | TMDL approved (8.30.07) |
| 241 | Arrowhead Pond               | 06-WED-00270-L_0 | 5a | Aquatic life impairment, > 10% of samples violate WQ criterion for pH.   |                         |
| 242 | Arrowhead Pond               | 06-WED-00270-L_0 | 5a | Primary contact impairment, > 10% of samples violate WQ criterion for pH.  |                         |
| 243 | Arrowhead Pond               | 06-WED-00270-L_0 | 5a | Primary contact impairment, aesthetically objectionable conditions due to turbidity.   |                         |
| 244 | Arrowhead Pond               | 06-WED-00270-L_0 | 5b | Aquatic life impairment, fish kill in 2005 caused by organic enrichment/low DO   |                         |
| 245 | Missouri River               | 06-WEM-0010_0    | 5a | Primary contact impairment, listing by adjacent state.   |                         |
| 246 | Missouri River               | 06-WEM-0020_1    | 5a | Primary contact impairment, listing by adjacent state.   |                         |
| 247 | Missouri River               | 06-WEM-0030_0    | 5a | Primary contact impairment, listing by adjacent state.   |                         |

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|-----|----------------|---------------|----|--|--|
| 248 | Missouri River | 06-WEM-0040_1 | 5a | Primary contact impairment, listing by adjacent state. |  |
| 249 | Missouri River | 06-WEM-0040_2 | 5a | Primary contact impairment, listing by adjacent state. |  |
| 250 | Missouri River | 06-WEM-0040_3 | 5a | Primary contact impairment, listing by adjacent state. |  |

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